

Serial No.: 09/655,403
Amendment dated May 6, 2004
Reply to Office Action of November 6, 2003

Docket No. K-0213

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for transmitting and receiving short message broadcast services in a communication system comprising:

transmitting a broadcast indicator using a common control channel to notify whether a base station is transmitting a broadcast message to a mobile station, the broadcast indicator indicating a transmission of a broadcast message on a paging channel or a broadcast channel, wherein the common control channel is a different channel from the paging channel or the broadcast channel;

receiving at the mobile station, the broadcast indicator through the common control channel and checking a status of the broadcast indicator; and

receiving, at the mobile station, a the broadcast message through the paging channel or the broadcast channel during a broadcast cycle from said base station if the status of the broadcast indicator received through the common control indicates the transmission of the broadcast message on the paging channel or the broadcast channel that said base station is transmitting a broadcast message, wherein said broadcast message is received through a common control channel during a broadcast cycle.

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2. (Currently Amended) A method of claim 1, further comprising transmitting, from said base station to the mobile station, an index through ~~a~~the paging channel prior to transmitting the broadcast indicator the common control channel, wherein the index is used to calculate the broadcast cycle.

3. (Currently Amended) A method of claim 1, wherein ~~transmitting the broadcast indicator through~~ the common control channel is a quick paging channel and the broadcast indicator is transmitted through the quick paging channel before transmitting a ~~the~~ broadcast message through the paging channel or the broadcast channel.

4. (Currently Amended) A method of claim 3, wherein ~~inserting and transmitting the~~ broadcast indicator is provided in a reserved region of the quick paging channel.

5. (Currently Amended) A method of claim 4, wherein the quick paging channel further includes a paging indicator and a configuration change indicator, and the broadcast indicator is located between the paging indicator and the configuration change indicator.

6. (Original) A method of claim 3, wherein transmitting the broadcast indicator by at least 2 bits.

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7. (Original) A method of claim 3, wherein transmitting the broadcast indicator 100ms prior to transmitting a broadcast message.

8. Canceled.

9. (Currently Amended) A method of claim 1, further comprising:

C1 Cont.
~~adding setting~~ a field to an expanded system parameter message and transmitting said set field to the mobile station, wherein said set field notifies whether said base station provides a broadcast indicator through the common control channel; and

checking, at the mobile station, the status of the broadcast indicator received through the common control channel, if set said field indicates that said base station provides a broadcast indicator on the common control channel; and

~~receiving, at the mobile station, a broadcast message from said base station if the status of the broadcast indicator indicates that said base station is transmitting a broadcast message.~~

10. (Original) A method of claim 9, wherein monitoring, at the mobile station, a first slot of a control channel in every broadcast cycle, if said field indicates that said base station does not provide a broadcast indicator.

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11. (Currently Amended) A method of claim 9, wherein transmitting said set field to the mobile station before transmitting a broadcast message to the mobile station.

12. (Original) A method of claim 9, wherein temporarily storing said field in a memory device of the mobile station.

13. Canceled.

C/ Cont. 14. (Currently Amended) A method of claim 1, wherein the mobile station enters an idle state if the broadcast indicator of the common control channel indicates ~~that said base station not is transmitting non-transmission of a broadcast message through the paging channel or the broadcast channel.~~

15. (Currently Amended) A method for transmitting and receiving short message broadcast services in a communication system comprising:

~~adding setting~~ a field to an expanded system parameter message and transmitting said set field to a mobile station, wherein said field notifies whether a base station provides a broadcast indicator on a quick paging channel;

transmitting ~~a the~~ broadcast indicator through ~~a the~~ quick paging channel before transmitting a broadcast message on a paging channel or the broadcast channel to notify whether the base station is transmitting a broadcast message to a mobile station;

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receiving and checking, at the mobile station, the status of the broadcast indicator on the quick paging channel, if said set field indicates that ~~a~~the base station provides ~~a~~the broadcast indicator on the quick paging channel; and

receiving, at the mobile station, ~~a~~the broadcast message from said base station if when the status of the broadcast indicator on the quick paging channel indicates that said base station is transmitting a broadcast message on the paging channel or the broadcast channel, ~~wherein said broadcast message is received through a common control channel during a~~ broadcast cycle.

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16. (Original) A method of claim 15, wherein inserting and transmitting the broadcast indicator in a reserved region of the quick paging channel by at least 2 bits.

17. (Currently Amended) A method of claim 15, wherein transmitting the broadcast indicator on the quick paging channel 100ms prior to transmitting ~~a~~the broadcast message on the paging channel or the broadcast channel.

18. (Original) A method of claim 15, wherein monitoring, at the mobile station, a first slot of a control channel in every broadcast cycle, if said field indicates that said base station does not provide a broadcast indicator.

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19. (Currently Amended) A method of claim 15, wherein the mobile station enters an idle state if the broadcast indicator on the quick paging channel indicates that said base station not is transmitting a broadcast message on the paging channel or the broadcast channel.

20. (Currently Amended) A method for receiving a broadcast message, comprising:
receiving a broadcast indicator on a first common channel and checking a status of the broadcast indicator on the first common channel; and

receiving a broadcast message on a second common channel from a base station if *C1 Cont* when the status of the broadcast indicator on the first common channel indicates that the base station is transmitting the broadcast message on the second common channel, wherein the broadcast message is received through ~~a~~ the second common control channel during a broadcast cycle and wherein the first common channel is a quick paging channel and the second common control channel is a paging channel or a broadcast channel.

21. Canceled.

22. (Currently Amended) The method of claim 20, wherein if the status of the broadcast indicator on the quick paging channel indicates that no broadcast message is transmitted, then the ~~second common control~~ paging or broadcast channel is not monitored for ~~a~~ the broadcast message.

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23. (Previously Presented) The method of claim 20, further comprising:
receiving an extended system parameters message containing a broadcast indicator supported field; and
checking the status of the broadcast indicator if the broadcast indicator supported field indicates that the base station has provided a broadcast indicator.

24. (Currently Amended) The method of claim 23, wherein a first slot of the paging channel or the broadcast channel is continuously monitored if the base station does not provide a broadcast indicator on the quick paging channel.

25. (Currently Amended) The method of claim 20, wherein the base station provides the broadcast message indicator on the quick paging channel 100ms prior to sending the broadcast message on the paging or broadcast channel.

26. (Currently Amended) A subscriber unit for a mobile communication system, comprising:

means for monitoring a first common channel to determine a value of a broadcast indicator carried on that channel; and

means for monitoring a second common channel to receive a broadcast message on the second common channel only when a value of the broadcast indicator indicates that the broadcast message is present on the second common channel wherein the first common channel

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is a quick paging channel and the second common channel is a paging channel or broadcast channel.

27. Canceled.

28. (Currently Amended) The device of claim ~~27~~26, wherein the means for the monitoring a ~~first common~~ the quick paging channel further determines a value of a plurality of paging indicators and a configuration change indicator carried on the ~~QPC~~H quick paging channel (QPCH).

29. (Previously Presented) The device of claim 28, wherein the broadcast indicator is sequenced before the configuration change indicator on the QPCH.

30. (Currently Amended) The device of claim 28, wherein the plurality of paging indicators are used to indicate that the subscriber unit operating in an idle state should monitor ~~at least one of the paging channel and a~~ or Forward Common Control Channel starting in a next slot, the broadcast indicator indicates whether a broadcast message is present on the paging channel, and the configuration change indicator is used to indicate that the subscriber unit operating in the idle state should monitor at least one of the paging channel, the Forward Common Control Channel, ~~and a~~ or the Broadcast Control Channel after performing an idle handoff, to determine if prescribed stored parameters of the subscriber unit should be updated.

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31. (Currently Amended) An information slot in a quick paging channel (QPCH), comprising:

a plurality of paging indicators in the QPCH to indicate that a mobile station operating in an idle state should monitor at least one of a Paging Channel ~~and or~~ a Forward Common Control Channel starting in a next slot;

a broadcast indicator in the QPCH to indicate whether a broadcast message is present on ~~a~~ at least one of the paging channel or the Forward Common Control Channel; and

C1 Cont
a configuration change indicator in the QPCH to indicate that the mobile station operating in the idle state that, after performing an idle handoff, it should monitor at least one of the Paging Channel, the Forward Common Control Channel, ~~and or~~ a Broadcast Control Channel to determine if the mobile station should update stored parameters wherein the broadcast indicator precedes the configuration change indicator in the information slot, and wherein the information slot is sent from a base station to a subscriber unit to indicate whether the base station is transmitting a broadcast message.

32. Canceled.

33. (Previously Presented) The information slot of claim 31, wherein each of the broadcast indicator and the configuration change indicator has a length of 2 bits when a data rate is 4800bps.

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34. (Previously Presented) The information slot of claim 31, wherein each of the broadcast indicator and the configuration change indicator has a length of 4 bits when a data rate is 9600bps.

35. Canceled.

36. (Previously Presented) The information slot of claim 35, wherein the base station is indicated to have sent a broadcast message when the broadcast indicator is set to 1.

c/ cont.
37. (Currently Amended) A method comprising setting a broadcast indicator to "ON" for a Quick Paging Channel slot which begins 100 ms prior to the beginning of a Paging Channel slot in which a broadcast message begins, wherein the method is performed when a base station sends the broadcast message on a Paging Channel, wherein the broadcast message contain a broadcast page.

38. Canceled.

39. (Previously Presented) The method of claim 37, comprising setting the broadcast indicator in a Quick Paging Channel slot to "OFF" when a broadcast message is not expected in a corresponding Paging Channel slot.

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40. (Previously Presented) The method of claim 37, wherein the method is implemented in a base station.

41. (Previously Presented) The method of claim 37, wherein a indicator rate of the Quick Paging Channel is 4800 bps.

42. (Previously Presented) The method of claim 41, whercin the broadcast indicator is positioned in two Quick Paging Channel bit positions prior to the last two bits in the first 40 ms half of a Quick Paging Channel slot of the Quick Paging Channel.

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43. (Previously Presented) The method of claim 41, wherein the broadcast indicator is positioned in the two Quick Paging Channel bit positions to the last two bits in a Quick Paging Channel slot of the Quick Paging Channel.

44. (Previously Presented) The method of claim 37, wherein an indicator rate of the Quick Paging Channel is 9600 bps.

45. (Previously Presented) The method of claim 44, wherein the broadcast indicator is positioned in the four Quick Paging Channel bit positions prior to the last four bits in the first 40 ms half of a Quick Paging Channel slot of the Quick Paging Channel.

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46. (Previously Presented) The method of claim 44, wherein the broadcast indicator is positioned in the four Quick Paging Channel bit positions to the last four bits in a Quick Paging Channel slot of the Quick Paging Channel.

47. (Previously Presented) An apparatus configured to implement the method of claim 37.

48. (Previously Presented) The apparatus of claim 47, wherein the apparatus is a base station.

49. (Currently Amended) A method comprising monitoring broadcast indicators on a Quick Paging Channel if an indicator is equal to "1", wherein the indicator indicates that a broadcast indicator is supported in the Quick Paging Channel; and the indicator is in a QPCH BI SUPPORTED field in an extended system parameter message; and

wherein said monitoring broadcast indicators is monitoring slots of the Quick Paging Channel and said monitoring broadcast indicators on the Quick Paging Channel is performed only if BCAS^T INDEX is not equal to "000", and

wherein broadcast slots of the Quick Paging Channel are offset from common control channel slots by 100 ms.

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50. Canceled.

51. Canceled.

52. Canceled.

53. Canceled.

ca/ Cont.
54. (Currently Amended) The method of claim ~~53~~⁴⁹, wherein BCAST_INDEX is a broadcast slot cycle index.

55. (Previously Presented) An apparatus configured to implement the method of claim 49.

56. (Previously Presented) The apparatus of claim 55, wherein the apparatus is a mobile station.

57. (Currently Amended) A method for sending a broadcast message comprising:
setting at least one broadcast indicator in a Quick Paging Channel, wherein the broadcast indicator indicates existence of the broadcast message on a common control channel;
and

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transmitting said at least one broadcast indicator from the base station;

setting a first information in an overhead message before transmitting the broadcast indicator, wherein the first information indicates a broadcast slot cycle index of transmitting the broadcast message;

setting a second information in the overhead message, wherein the second information indicates whether or not the broadcast indicator is supported in the quick paging channel; and

transmitting the overhead message through the common control channel.

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58. Canceled.

59. (Currently Amended) The method of claim ~~58~~57, wherein the broadcast cycle index is 3 bits.

60. (Currently Amended) The method of claim ~~58~~57, wherein the overhead message is an extended system parameter message.

61. (Currently Amended) The method of claim ~~58~~57, wherein the first information is a broadcast slot cycle index field BCAST_INDEX and the second information is QQRCH_BI_SUPPORTED.

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62. (Previously Presented) The method of claim 61, wherein the broadcast slot cycle index field BCAST_INDEX is i , $1 \leq i \leq 7$.

63. (Currently Amended) The method of claim 57, wherein the common control channel is a paging channel or a broadcast channel.

64. Canceled.

c/cont -
65. (Previously Presented) The method of claim 57, comprising transmitting the broadcast message in the common control channel at a predetermined amount of time after said transmitting said at least one broadcast indicator.

66. (Previously Presented) The method of claim 65, wherein the predetermined amount of time is 100ms.

67. Canceled.

68. Canceled.

69. (Currently Amended) A method comprising transmitting or receiving data of a quick paging channel, wherein the data comprises:

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at least one paging indicator;
at least one configuration change indicator; and
at least one broadcast indicator, wherein for each slot of the quick paging channel
said at least one broadcast indicator is adjacent and between said at least one paging indicator
and said at least one configuration change indicator.

70. Canceled.

71. (Currently Amended) A method comprising:

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Cont -
receiving a broadcast indicator on a quick paging channel (QPCH); and
if the broadcast indicator indicates existence of a broadcast message, then
monitoring a common control channel for reception of the broadcast message, wherein the
common control channel is a paging channel or a broadcast channel;
receiving an overhead message through a common channel before receiving the
broadcast indicator on the QPCH; and
obtaining a first information and a second information in an overhead message,
wherein the first information indicates a broadcast slot cycle index of transmitting the broadcast
message and the second information indicates whether or not the at least one broadcast indicator
is supported in the quick paging channel.

72. Canceled.

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73. Canceled.

74. (Previously Presented) The method of claim 71, wherein the method is implemented in a mobile station.

75. (Previously Presented) The method of claim 74, wherein the method is implemented only if the mobile station supports monitoring the broadcast indicator in the quick paging channel.

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76. Canceled.

77. (Currently Amended) The method of claim 76, wherein the overhead message is an extended system parameter message.

78. (Previously Presented) The method of claim 76, wherein the first information is a broadcast slot cycle index field BCAST_INDEX and the second information is a QPCH_BI_SUPPORTED.

79. (Previously Presented) The method of claim 78, wherein the broadcast slot cycle index field BCAST_INDEX is 3 bits.

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80. (Previously Presented) The method of claim 79, wherein the 3 bits represent a number ranging from 1 to 7.

*C1
Canc.*
81. Canceled.

82. Canceled.
